Claims

1. A solid state thermal engine comprising:

a first drum;

a second drum;

a first and a second pulley positioned on said first drum;

a third and a fourth pulley positioned on said second drum;

an idler belt positioned around said first pulley and said third pulley; and

an active belt positioned around said second pulley and said fourth pulley;

wherein a portion of said active belt is heated, thereby causing said active belt to expand and reduce the tension on said active belt, thereby causing a rotation of said active belt around said second pulley and said fourth pulley.

2. The solid state thermal engine according to claim 1, wherein said first pulley comprises a larger radius than said second pulley.

3. The solid state thermal engine according to claim 1, wherein said third and fourth pulleys comprise a larger radius than said first pulley.

4. The solid state thermal engine according to claim 1, wherein a heat exchanger heats said active belt.

5. The solid state thermal engine according to claim 1, wherein a portion of said active belt is cooled.

6. The solid state thermal engine according to claim 1, wherein said active belt comprises a memory metal.

7. The solid state thermal engine according to claim 6, wherein said memory metal comprises NITINOL.

8. The solid state thermal engine according to claim 1, wherein a restrictive force prevents said first, second, third and fourth pulleys from rotating.

9. The solid state thermal engine according to claim 8, wherein after said heating of said active belt, said restrictive force is removed allowing said active belt to rotate around said second pulley and said fourth pulley.

10. A solid state thermal engine comprising:

a first drum;

a second drum;

a third drum;

a first and second pulley positioned on said first drum;

a third, fourth, and fifth pulley positioned on said second drum; and

a belt interconnecting said first, second and third drums;

wherein a portion of said belt is heated, said heating causing said belt to expand and to reduce the tension on said belt, thereby causing said belt to move around said first, said second and said third drums, and causing said first, second and third drums to rotate.

11. The solid state thermal engine according to claim 10, wherein said first pulley comprises a greater radius than said second pulley.

12. The solid state thermal engine according to claim 10, wherein said third, fourth and fifth pulleys comprise a greater radius than said first pulley.

13. The solid state thermal engine according to claim 10, wherein said third and fourth pulleys are connected so that said third and fourth pulleys rotate with the same angular velocity.

14. The solid state thermal engine according to claim 10, wherein said fourth and fifth pulleys are connected so that said fourth and fifth pulleys rotate with the same angular velocity.

15. The solid state thermal engine according to claim 10, wherein said belt is heated by a heat exchanger.

16. The solid state thermal engine according to claim 10, wherein said first drum is allowed to move transversely towards and away from said second drum, and whereupon said heating of said belt, said solid state thermal engine functions as a chain fall.

17. A solid state thermal engine comprising:

a first drum, said first drum comprising a first pulley and a second pulley;

a second drum, said second drum comprising a third pulley and a fourth pulley;

means to connect said first pulley and said third pulley;

means to connect said second pulley and said fourth pulley; and

means to heat said means connecting said second pulley and said fourth pulley, said heating causing said connecting means to expand and decrease in tension, and further causing said connecting means to rotate around said pulleys.

18. A process to generate a rotational force from a belt and pulley system comprising the steps of:

connecting a first pulley and a second pulley by an idler belt;

connecting a third pulley and a fourth pulley by an active belt; and

heating a portion of said active belt;

wherein said heating of said active belt causes said active belt to expand, thereby decreasing the tension on said active belt and causing said active belt and said third and fourth pulleys to rotate.

19. The process to generate a rotational force from a belt and pulley system according to claim 18, wherein said rotational force is converted into a linear force.